

CLAIMS

1. A portable device comprising
control means for controlling the operation of the device;
tone means that are controlled by the control means and that pro-
5 duce sound electroacoustically;
which control means are arranged to give feedback on the opera-
tion of the device by using a tone produced by the tone means; and
determining means for determining the volume of background noise
of the usage environment of the device, on the basis of which background
10 noise volume the control means are arranged to automatically adjust at least
one tone feature that can be sensed by hearing, such that the tone is distin-
guished from background noise by a human hearing sense.
2. A portable device as claimed in claim 1, wherein the tone feature
is tone frequency.
- 15 3. A portable device as claimed in claim 2, wherein the determining
means are arranged to determine the volume of background noise at different
frequencies, and the control means are arranged to produce a tone particularly
at such frequencies where the volume of background noise is low.
4. A portable device as claimed in claim 1, wherein the tone feature
20 is tone volume.
5. A portable device as claimed in claim 4, wherein the control
means are arranged to produce a tone that is louder than background noise.
6. A portable device as claimed in claim 1, wherein the tone feature
is the moment of time at which the tone is produced.
- 25 7. A portable device as claimed in claim 6, wherein the determining
means are arranged to determine the moment at which a sudden background
noise of short duration occurs, and the control means are arranged to produce
a tone nonsimultaneously with the moment at which background noise occurs.
8. A portable device as claimed in claim 1, wherein the tone feature
30 is tone duration.
9. A portable device as claimed in claim 8, wherein the control
means are arranged to form a tone from notes and to make the individual
notes sound longer when background noise is getting louder.
10. A portable device as claimed in claim 1, wherein the determin-
35 ing means comprise conversion means for performing an acousto-electric

092409-9208860

conversion for background noise and the control means, which control means are arranged to determine the volume of background noise by analysing an electric signal representing background noise.

- 5 11. A portable device as claimed in claim 10, wherein the conversion means are a microphone.
- 10 12. A portable device as claimed in claim 1, wherein the tone means are a loudspeaker or a piezoelectrically functioning circuit.
- 15 13. A portable device as claimed in claim 1, wherein the control means are arranged to receive a control relating to at least one of the tone features that can be sensed by a human hearing sense and controlling the tone production carried out by the user interface of the portable device.
- 20 14. A portable device as claimed in claim 13, wherein those tone frequency ranges that are automatically selectable for the control means are selected by the control.
- 25 15. A portable device as claimed in claim 13, wherein those tone durations that are automatically selectable for the control means are selected by the control.
- 30 16. A portable device as claimed in claim 1, wherein the portable device is a subscriber terminal of a telecommunication system.
- 35 17. A portable device comprising:
 control means for controlling the operation of the device;
 a user interface in connection with the control means;
 tone means that are controlled by the control means and that produce sound electroacoustically;
 which control means are arranged to give feedback on the operation of the device by using a tone produced by the tone means; and
 the control means are arranged to receive a control affecting the tone frequency and/or duration and controlling the tone production carried out by the user interface, and to adjust the tone frequency and/or duration according to the control.
- 40 18. A portable device as claimed in claim 17, wherein the tone means are a loudspeaker or a piezoelectrically functioning circuit.
- 45 19. A portable device as claimed in claim 17, wherein the portable device is a subscriber terminal of a telecommunication system.
- 50 20. A method of providing a user with information on the operation of a portable device, the method comprising:

detecting an event that interests the user and concerns the operation of the device;

determining the volume of background noise in the usage environment of the device;

- 5 adjusting automatically at least one tone feature that can be sensed
by hearing such that the tone is distinguished from background noise by a
human hearing sense;

10 giving feedback on the operation of the device by using the tone.

15 21. A method as claimed in claim 20, wherein the tone feature is
tone frequency.

20 22. A method as claimed in claim 21, further comprising:
determining the volume of background noise at different frequencies
and producing a tone particularly at such frequencies where the volume of
background noise is low.

25 23. A method as claimed in claim 20, wherein the tone feature is
tone volume.

30 24. A method as claimed in claim 23, further comprising:
producing a tone that is louder than background noise.

35 25. A method as claimed in claim 20, wherein the tone feature is the
moment of time at which the tone is produced.

40 26. A method as claimed in claim 25, further comprising:
determining the moment at which a sudden background noise of
short duration occurs, and producing a tone nonsimultaneously with the moment
at which background noise occurs.

45 27. A method as claimed in claim 20, wherein the tone feature is
tone duration.

50 28. A method as claimed in claim 27, further comprising:
forming a tone from notes and making the individual notes sound
longer when background noise is getting louder.

55 29. A method as claimed in claim 20, further comprising:
performing an acousto-electric conversion for background noise and
determining the volume of background noise by analysing an electric signal
representing background noise.

60 30. A method as claimed in claim 20, further comprising:

receiving a control relating to at least one of the tone features that can be sensed by hearing and controlling the tone production carried out by the user interface of the portable device.

31. A method as claimed in claim 30, further comprising:
 - 5 selecting those tone frequency ranges by means of the control to which the tone can be adjusted automatically.
 32. A method as claimed in claim 30, further comprising:
 - selecting those tone durations by the control that can be adjusted automatically for the tone.
 - 10 33. A method as claimed in claim 20, wherein the portable device is a subscriber terminal of a telecommunication system.
 34. A method of providing a user with information on the operation of a portable device, the method comprising:
 - 15 detecting an event that interests the user and concerns the operation of the device;
 - receiving a control affecting a tone frequency and/or duration and controlling the tone production from a user interface of the device;
 - adjusting the tone frequency and/or duration according to the control;
 - 20 giving feedback on the operation of the device by using the tone.
 35. A method as claimed in claim 34, wherein the portable device is a subscriber terminal of a telecommunication system.